# Department of Defense Supplement

# To The

# National Manual on Uniform Traffic Control Devices

**For Streets and Highways**

**2015**

U.S. Department
of Transportation
**Federal Highway Administration**

1200 New Jersey Ave., SE
Washington, D.C. 20590

May 20, 2015

In Reply Refer To:
HFPD-1

Mr. Bruce A. Busler, SES
Special Assistant for Transportation Engineering
Department of the Army
Military Surface Deployment and Distribution Command
1 Soldier Way
Scott AFB, IL 62225

Dear Mr. Busler:

The Federal Highway Administration (FHWA), Office of Federal Lands Highway (FLH) has reviewed and commented on the Department of Defense (DOD) Supplement to the National Manual on Uniform Traffic Control Devices (MUTCD). Based on the review conducted by the FHWA MUTCD Team and FLH, coupled with subsequent modifications made by SDDC, the DOD MUTCD Supplement is found to be in substantial conformance with the current national MUTCD as per 23 CFR 655.603.

We appreciate the collaboration between FLH and the DOD throughout this process. Should you have any questions, please contact Joris Torres, FLH DAR Program Manager at (202) 366-4558 or jorismar.torres@dot.gov.

Sincerely yours,

Robert Arnold
Acting Associate Administrator for
Office of Federal Lands Highway

**FOREWORD**

The Manual on Uniform Traffic Control Devices (MUTCD) provides guidance and warrants for the installation of traffic control devices. These guidelines and warrants (along with local requirements) should be followed to minimize the military installation's tort liability associated with the inappropriate use of traffic control devices. By military regulations, commanders are required to conform to the MUTCD.

Please note the MUTCD and this Supplement may have been updated. Please consult FHWA and SDDCTEA for the current edition.

The MUTCD is incorporated by reference in 32 Code of Federal Regulations (CFR), Part 634, Subpart D and shall be recognized as the national standard for all traffic control devices installed on any street, highway, or bicycle trail on military installations.

Additional Military Requirement

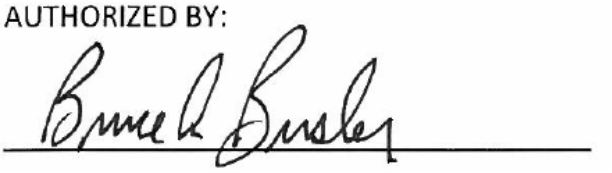
Multi-Service Regulation (AR 55-80, OPNAVINST 11210.2, AFMAN 32- 1017, MCO 11210.2D, and DLAR 4500.19) of the Department of Defense (DoD) Transportation Engineering Program identifies in Section 3-11 the Military's Highway Safety Program requirements:

Under General: "This section prescribes the policies and procedures related to DoD highway safety needs. It implements 23 USC 402, DODD 4510.11, DODD 4715.1 and DoDI 6055.4."

Under Policies: "Installation commanders will develop and maintain their roadways to nationally accepted standards that provide a safe driving environment for all drivers and passengers."

Under Traffic Control Device Plan: "All installation traffic signals, signs, and pavement markings will be in substantial conformance to FHWA's Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD) (http://mutcd.fhwa.dot.gov). Variances in the design and application of installation traffic control devices from the standards contained in MUTCD must be approved by MTMC (now Surface Deployment and Distribution Command (SDDC)) and FHWA."

AUTHORIZED BY:



BRUCE A. BUSLER, SES

Director, Transportation Engineering Agency

# INTRODUCTION TO THE SUPPLEMENT

This document is the Department of Defense (DOD) supplement to the national MUTCD.

As noted in the preceding certification, the 2015 edition of the DOD Supplement to the MUTCD is intended to be a companion document to the national MUTCD. The DOD Supplement to the MUTCD is in addition to the current Edition of the national MUTCD, including subsequent official revisions thereto. The MUTCD is available on-line at http://mutcd.fhwa.dot.gov/. This DOD supplement is the basic standard for traffic control devices on military installations; however, it does not provide detailed examples of signing and striping schemes, diagrams or background information. Refer to SDDCTEA pamphlets for details.

Per Multi-Service Regulation (AR 55-80, OPNAVINST 11210.2, AFMAN 32- 1017, MCO 11210.2D, and DLAR 4500.19): "Variances in the design and application of installation traffic control devices from the standards contained in the MUTCD must be approved by Surface Deployment and Distribution Command Transportation Engineering Agency (SDDCTEA) and Federal Highway Administration (FHWA)."

The part, section, and paragraph numbers used in this supplement add to the like numbers used in the MUTCD. None of the provisions of the MUTCD are omitted, although some provisions may not be specifically relevant to DOD installations. The meanings of the text headings of "Standard", "Guidance", "Option", and "Support" have the same meanings in this supplement as they do in the MUTCD. Standards are requirements that shall be adhered to. Guidelines are best practices and should be adhered to unless site specific conditions make it impractical. Options are other alternatives that may be used which are neither preferred nor discouraged. Support is additional information for the benefit of the reader.

With the issuance of this supplement, any newly installed traffic control devices should be, as much as practical, installed in conformance with the Standards contained herein. It is anticipated that revisions will be periodically made to the national MUTCD. These will be reviewed by SDDCTEA and revisions made to this supplement when appropriate.

Standard signs are designated by letters and numbers such as R2-1-TEA. The key to the sign designations is as follows: The beginning letter indicates the general type of sign, such as R for regulatory, W for warning, etc. The first number indicates the sign group such as speed series, crossing series, etc. The number between the hyphens is the designation of the sign within its group. All DOD-specific signs designed by SDDCTEA will have a letter and number designation ending with TEA, to distinguish them from the signs in the MUTCD. Also included in the sign designation may be lower case letters where there are alternate display options (i.e. where there are both word and symbol messages, or alternate word messages) or the letters R and L for right and left, respectively.

Military installations should be mindful that states either adopt the national MUTCD as written, adopt a state supplement to go along with the national MUTCD, or they adopt a state-specific MUTCD to replace the national MUTCD. In the interest of statewide uniformity, it is very important for military

installations to not only follow the DOD Supplement, but also the MUTCD that is specific to their host state. Additionally, note that this supplemental document is not a substitute for the state MUTCD used in the host state. This document builds on the state and national MUTCD for military-specific traffic control applications; including specially developed signing, pavement marking applications, traffic control for Entry Control Facilities (ECFs), and pedestrian crosswalk warrants.

In the event that the state MUTCD and DOD supplement contradict, the state supplement shall be used.

Regarding outside continental United States (OCONUS) installations, this supplement applies in the following locations: Alaska, Hawaii, and US Territories where the MUTCD or a variant as described above is used; or when Status of Force Agreement standards and requirements do not dictate design parameters. This supplement does not apply when local host-country traffic control devices are not based on and differ substantially from the MUTCD. In this case, the traffic control devices must follow requirements and design standards of the host country. For military-specific requirements, contact SDDCTEA.

# PART 1

# General

## Chapter 1A. General

**Section 1A.09 Engineering Study and Engineering Judgment**

*Guidance:*

*The decision to use a particular device at a particular location should be made on the basis of either an engineering study or the application of engineering judgment as defined in the national MUTCD. Thus, while this Manual provides Standards, Guidance, and Options for design and application of traffic control devices, it should not be considered a substitute for engineering judgment. Engineering judgment should be exercised in the selection and application of traffic control devices, as well as in the location and design of the roads and streets that the devices complement.*

**Section 1A.15 Abbreviations used on Traffic Control Devices**

**Standard:**

**When the word messages shown in Table 1A-1 need to be abbreviated in connection with a traffic control device, the abbreviation shall conform to Table 1A-1.**

**Table 1A-1. Common Abbreviations**

| **Word Message** | **Abbreviation*** |
|---|---|
| Air Force Base | AFB |
| Building | BLDG, Bldg |
| Department | DEPT, Dept |
| Division | DIV, Div |
| Fort | FT, Ft |
| Headquarters | HQ, Hq |
| Naval Air Station | NAS |
| Physical Training | PT |
| United States Air Force | USAF |
| United States Army | USA |
| United States Coast Guard | USCG |
| United States Marine Corps | USMC |
| United States Navy | USN |
| Veterans Affairs | VA |
| * Upper/lowercase abbreviations are for use only on Guide Signs | |

# PART 2

# Signs

## Chapter 2A. General

**Section 2A.08 Maintaining Minimum Retroreflectivity**

**Standard:**

**The retroreflective sheeting type for all regulatory, warning, and guide signs shall be Type III or better.**

Support:

Types I and II provide the minimum acceptable level of retroreflectivity when new, but have a higher lifetime annualized cost when compared to higher grades of sheeting type.

**Section 2A.24 Units**

**Standard**:

**English units shall be used on all CONUS signs. This includes, but is not limited to, speed limits, distances, width, height, and load limit restrictions. OCONUS signs shall conform to the host nation standards and units.**

Option:

System International units may be used to supplement or replace English units if this commonly occurs in statewide or OCONUS practice.

**Section 2A.25 Unified Facilities Guide Specification on Signs (UFGS 10 14 53)**

In the absence of a state department of transportation specifications, utilize the UFGS for sign material specifications.

**Section 2A.26 Unified Facilities Criteria - Design: Sign Standards (UFC 3-120-01)**

Utilize UFC 3-120-01 for non-traffic control signing. This UFC provides guidance on Branch Logos, installation welcome signs, and building interior/exterior signing.

# Chapter 2B. Regulatory Signs

**Section 2B.03 Size of Regulatory Signs**

**Standard:**

**The sizes for regulatory signs shall be as shown in Table 2B-1.**

## *Table 2B-1. Regulatory Sign Sizes*

| Sign | Sign Code | Section | Conventional Road Size (in) |
|---|---|---|---|
| 10 MPH WHEN PASSING TROOPS IN FORMATION | R2-1a-TEA | 2B.71 | 24 x 30 |
| BASE | R2-5hP-TEA | 2B.71 | 24 x 12 or *36 x 15 |
| INSTALLATION | R2-5iP-TEA | 2B.71 | 24 x 8 or *36 x 12 |
| GOVERNMENT VEHICLES ONLY | R5-11g-TEA | 2B.75 | 30 x 24 |
| NO TACTICAL VEHICLES | R5-11h-TEA | 2B.75 | 30 x 24 |
| SEVERE TIRE DAMAGE | R5-29P-TEA | 2B.70 | 30 x 24 |
| DO NOT BACK UP — ONE-WAY TIRE SPIKES | R5-29Q-TEA | 2B.70 | 30 x 30 |
| GATE CLOSED | R11-2g-TEA | 2B.73 | 48 x 30 |
| NO THRU TRAFFIC | R11-4a-TEA | 2B.74 | 24 x 30 |
| ROAD CLOSED FOR PT X-X AM | R11-4b-TEA | 2B.72 | 36 x 48 |
| USE SEAT BELTS | R16-1b-TEA | 2B.76 | 24 x 30 |
| USE PARKING LIGHTS AT GATE | R16-5a-TEA | 2B.76 | 24 x 30 |
| NO CELL PHONE WHEN DRIVING | R22-1-TEA | 2B.76 | 36 x 36 |
| TURN OFF 2-WAY RADIO AND CELL PHONE | R22-2-TEA | 2B.77 | 42 x 36 |
| NO RADIO TRANSMISSIONS | R22-3-TEA | 2B.77 | 36 x 24 |
| RADIO TRANSMISSIONS PERMITTED | R22-4-TEA | 2B.77 | 36 x 24 |
| | | | |

*To be used on expressways

**Section 2B.70 Tire Spike Signs (R5-29P-TEA, R5-29Q-TEA)**

**Standard:**

**Spike signs shall be used for outbound lanes whenever one-way tire spikes are in-place to inform motorists of their presence. The R5-29P-TEA sign shall be used with and mounted below the DO NOT ENTER (R5-1) sign, and the R5-29Q-TEA sign shall be used for the correct direction of traffic. These signs may be mounted back to back on the same post.**

Support:

Tire spikes are designed to shred vehicle tires and are often used at internal gates, ECFs, and other locations to prevent wrong-way travel.

**R5-29P-TEA**


**R5-29Q-TEA**


**Section 2B.71 Speed Limit**

**Supplemental Signs (R2 series)**

**Standard:**

**Speed Limit signs shall be used as discussed in Section 2B.13 of the national MUTCD.**

Option:

Speed Limit Supplemental Signs may be used when it is desired to post general speed regulations for large areas. This reduces the number of Speed Limit (R2-1) signs throughout the installation. In this situation, one of the following plaques should be installed above the R2-1 sign:

- BASE (R2-5hP-TEA)
- INSTALLATION (R2-5iP-TEA)

If there are any portions within the “restricted area” with a different regulatory speed limit, then an UNLESS OTHERWISE POSTED (R2-5P) plaque should also be mounted below the R2-1 sign as illustrated below.

Support:

A RESIDENTIAL (R2-5cP) plaque may also be installed above the R2-1 sign.

*Guidance:*

*When Speed Limit Supplemental Signs are used to establish speed boundaries or areas, military installations are encouraged to use the larger, 30”x36” Speed Limit (R2-1) sign. In addition, if there is more than one travel lane on the approach, a second sign assembly should be mounted on the left side of the left lane; e.g., within a median, or if this is not possible, install a second sign assembly at least 250 feet beyond the first sign assembly.*

**R 2-5hP-TEA, R2-1 & R2-5P**


**R2-1a-TEA**


**Standard:**

**The R2-1a-TEA sign shall only be used as a supplement and mounted below the R2-1 speed limit sign.**

**When a lower speed limit is determined necessary where troop movement in the roadway occurs, the R2-1a-TEA supplemental sign shall be used.**

**A similar sign can be used where explosive-laden vehicles are common. In this case, the sign should read: 10 MPH WHEN PASSING EXPLOSIVE-LADEN VEHICLES.**

**Section 2B.72 <u>ROAD CLOSED FOR PT – X-X AM Sign (R11-4b-TEA)</u>**

**Standard:**

**The R11-4b-TEA sign shall be used where the road is routinely closed for PT.**

*Guidance:*

*The hours should be shown in civilian time, not military time.*

**R11-4b-TEA**


**Section 2B.73 <u>GATE CLOSED Signing (R11-2g-TEA)</u>**

**Standard:**

**When gates are used to close off a roadway, a GATE CLOSED sign shall be used in combination with retroreflective, alternating, vertical red and white stripes (16 inches in width) on a sign panel (see section 8C.04 of the national MUTCD). The sign panel must be a minimum of 4 inches in width and span the entire length of the gate on both sides. The total surface area of the retroflective strip shall not be less than 1152 square inches per approach lane.**

**A minimum of two GATE CLOSED (R11-2g-TEA) signs are required, one for the in-bound approach and one for the out-bound approach.**

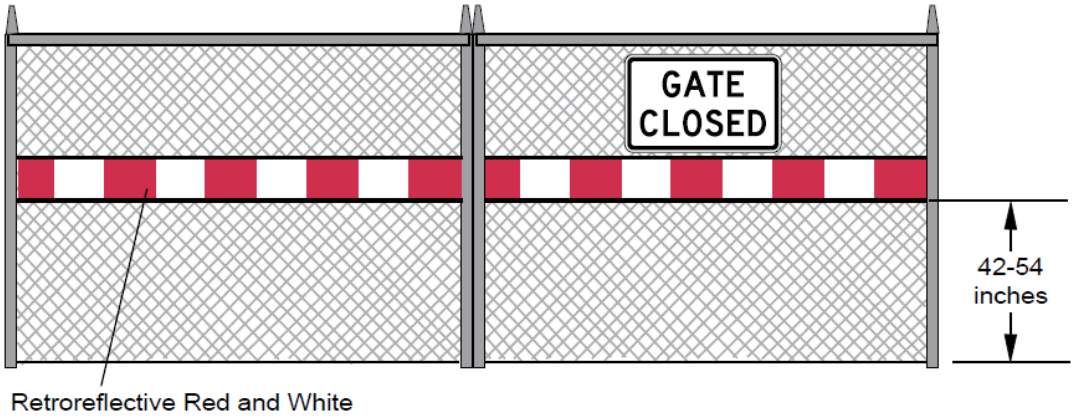
**STOP signs or other intersection signing shall not be used.**

**When gates are used to close an ECF, a sign displaying ECF hours of operation shall be posted.**

Support:

STOP signs provide the message that vehicles can proceed after having stopped, therefore a STOP sign is not appropriate.

**R11-2g-TEA**


**Section 2B.74 <u>NO THRU TRAFFIC (R11-4a-TEA)</u>**

Option:

The NO THRU TRAFFIC (R11-4a-TEA) sign may be used to prohibit traffic from using residential streets or other safety-sensitive roadways as through streets. This sign is placed primarily at or near the boundary of these sensitive areas frequently used as shortcuts by commuter traffic.

**R11-4a-TEA**

**Section 2B.75 Vehicle Exclusion Signing (R5, R9, R 14 Series Signs)**

Support:

As discussed in Section 2B.39 of the national MUTCD, several sign messages can be used for selective vehicle exclusion or inclusion. The following signs are used to more effectively communicate the message on military installations.

**R5-11g-TEA**


**R5-11h-TEA**


**Standard:**

**In cases where privately-owned vehicles (POVs) are excluded, the GOVERNMENT VEHICLES ONLY (R5-11g-TEA) sign shall be used.**

**In cases where POVs and government vehicles are allowed but tactical vehicles are not allowed, the NO TACTICAL VEHICLES (R5-11h-TEA) sign shall be used.**

*Guidance:*

*When used, erect the sign on the right side of the road or on both sides of the road at the point where the restriction begins, which should always be at a location that allows unauthorized vehicles to turn to* avoid *the restricted area.*

**Section 2B.76 Installation Entrance Signing (R22-1-TEA, R16-1b-TEA, R16-5a-TEA)**

Support:

Several signs are used to inform motorists of installation-specific regulations upon entering the installation. Common signs include the Use Seat Belts, Use Parking Lights at Gate and the No Cell Phone When Driving.

*Guidance:*

*The USE SEAT BELTS (R16-1b-TEA) sign should be used to emphasize that wearing safety belts is mandatory. Optional messages include SEAT BELTS REQUIRED.*

**Standard:**

**Where the regulation exists, the R16-1b-TEA sign shall be placed immediately after the perimeter gate. Note that if state laws require the use of seat belts, this sign is not required.**

*Guidance:*

*In an effort to reduce glare for security personnel at ECFs, the USE PARKING LIGHTS AT GATE (R16-5a-TEA) sign should be used in advance of ECFs to require motorists to use their parking lights.*

*When military installations have restrictions on the use of cell phones while driving, the NO CELL PHONE WHEN DRIVING (R22-1-TEA) sign should be installed for inbound traffic in the vicinity of the gate, and at select locations within the installation.*

**R22-1-TEA**


**R16-1b-TEA**


**R16-5a-TEA**


**Section 2B.77 <u>Radio and Cell Phone Prohibition Signs (R22 Series)</u>**

*Guidance:*

*When localized restrictions on the use of two-way radios and cell phones in the proximity of explosives or other sensitive areas exist, the TURN OFF 2-WAY RADIO AND CELL PHONE (R22-2-TEA) sign or the NO RADIO TRANSMISSIONS (R22-3-TEA) sign should be installed in advance of applicable locations.*

*The RADIO TRANSMISSIONS PERMITTED (R22-4-TEA) sign should be used to inform drivers when the prohibition no longer applies.*

Support:

These signs are frequently used to supplement other informational signs explaining the hazard.

**R22-2-TEA**


**R22-3-TEA**


**R22-4-TEA**

**Section 2B.78 <u>STAY IN VEHICLE (R9-20 TEA)</u>**

**Standard:**

**Where the regulation exists at ECFs, the R9-20 TEA sign shall be placed prior to the ID check or inspection station.**

*Guidance:*

*If applicable, The R9-20 TEA sign should also be placed at the inspection location.*

**R9-20 TEA**

# Chapter 2C. Warning Signs

**Section 2C.04 Size of Warning Signs**

**The sizes for warning signs shall be as shown in Table 2C-2.**

## *Table 2C-2. Warning Sign Sizes*

| | | | Conventional | | | |
|---|---|---|---|---|---|---|
| Sign | Sign Code | Section | Single Lane | Multi-Lane | Expressways | Minimum Size* |
| WINDING ROAD | W1-5 | 2C.70 | 30 x 30 | 36 x 36 | 36 x 36 | |
| CHICANE | W1-5P-TEA | 2C.70 | 24 x 12 | 24 x 12 | 30 x 18 | |
| CHECK POINT | W3-10a-TEA | 2C.71 | 36 x 36 | 36 x 36 | 48 x 48 | 30 x 30 |
| CHECK POINT (XXXX) FEET BE PREPARED TO STOP | W3-10b-TEA | 2C.71 | 84x60 | 84x60 | | |
| ACTIVE BARRIER AHEAD | W3-3a-TEA | 2C.72 | 36 x 36 | 36 x 36 | 48 x 48 | |
| BARRIER ACTIVATED WHEN FLASHING | W3-3b-TEA | 2C.72 | 36 x 36 | 36 x 36 | 48 x 48 | |
| STOP AHEAD WHEN FLASHING | W3-3c-TEA | 2C.72 | 36 x 36 | 36 x 36 | 48 x 48 | 30 x 30 |
| GATE CLOSED AHEAD | W20-3g-TEA | 2C.73 | 36 x 36 | 36 x 36 | 48 x 48 | 30 x 30 |
| APPLICABLE HOURS | W16-20P-TEA | 2C.73 | Varies x 12 | Varies x 12 | Varies x 18 | |
| LOW AIRCRAFT | W11-26-TEA | 2C.74 | 30 x 30 | 36 x 36 | 36 x 36 | 24 x 24 |
| TAXIWAY | W11-27-TEA | 2C.74 | 30 x 30 | 36 x 36 | 36 x 36 | 24 x 24 |
| TANK CROSSING | W11-28-TEA | 2C.74 | 30 x 30 | 36 x 36 | 36 x 36 | 24 x 24 |
| HAZARDOUS CARGO CROSSING | W11-29-TEA | 2C.74 | 30 x 30 | 36 x 36 | 36 x 36 | 24 x 24 |

** Only use for constrained environments, alleys and range roads.*

**Section 2C.70 Winding Road Sign (W1-5) and CHICANE Plaque (W1-5P-TEA)**

Option:

When chicanes are used as a security measure, approaching and departing ECFs, the Winding Road Sign (W1-5) sign with supplemental CHICANE plaque (W1-5P-TEA) may be used.

**W1-5R with W1-5P-TEA plaque**


*Guidance:*

*Post an advisory speed plaque, beneath the CHICANE supplemental plaque, if the speed through the chicane differs more than 5 mph from the posted speed limit*.

**Section 2C.71 Entry Control Facility /Access Control Point Signs - Approach Zone (W3 Series)**

**Standard:**

**Entry control facilities shall have either a CHECKPOINT (W3-10a-TEA) sign with the "AHEAD" plaque (W16-9P), or a CHECKPOINT (W3-10a-TEA) with the (XXXX) FEET W16-2P plaque**

Option:

The CHECKPOINT (XXXX) FEET – BE PREPARED TO STOP Sign (W3-10b-TEA) may be used in addition to or in-place of the CHECKPOINT AHEAD sign (W3-10a-TEA & W16-9P) to emphasize approaching checkpoint, especially on long roadway approaches, high speed roadways and multi-lane facilities.

**W3-10a-TEA with W16-9P**


**W3-10b-TEA**


**Section 2C.72 Entry Control Facility /Access Control Point Signs - Response Zone (W3 Series)**

**Standard:**

**The BARRIER ACTIVATED WHEN FLASHING (W3-3c-TEA) sign shall be used on all approaches to Active Vehicle Barriers (AVBs).**

**The W3-3b-TEA sign shall use amber flashing beacons that are activated simultaneously with the activation of the AVB.**

Option:

The ACTIVE BARRIER AHEAD (W3-3a-TEA) sign may be installed to further emphasize the approaching AVB.

**W3-3a-TEA**


**W3-3b-TEA**

**Section 2C.73 Gate Closures (W20-3g-TEA)**

**Standard:**

**The GATE CLOSED AHEAD (W20-3g-TEA) sign shall be used for gates that are closed on a routine basis during the work week.**

*Guidance:*

The *(W16-20P-TEA) plaque, displaying the hours, should be installed below the warning sign. Other options include folding or removing the advance sign or using a WHEN FLASHING (W16-13P) plaque, in conjunction with amber flashing beacons.*


**Section 2C.74 Military Vehicle Special Signing (W11 Series)**

Option:

The LOW AIRCRAFT (W11-26-TEA) sign may be used in advance of a runway when the sudden appearance or noise from low-flying aircraft might startle an unsuspecting driver.

The TAXIWAY (W11-27-TEA) sign may be used to alert drivers when an aircraft taxiway either crosses or runs adjacent to the roadway.

The TANK CROSSING (W11-28-TEA) sign may be used to alert drivers to the possible presence of heavy armament vehicles that may cross the roadway.

The HAZARDOUS CARGO CROSSING (W11-29-TEA) sign may be used to warn drivers that there may be trucks hauling hazardous materials crossing the roadway.

**Standard:**

**No variants of these signs with symbols shall be used in lieu of the text message since FHWA has not issued approval of symbols for these situations**.

**W11-26-TEA**


**W11-27-TEA**


**W11-28-TEA**


**W11-29-TEA**

**Section 2D.57 ECF Vehicle Separation Signs**

Guidance:

It is beneficial to properly sign the appropriate destination for vehicles that are required to travel within the ECF. Typically, these include truck inspection areas and visitor centers. Signs, such as those shown below, indicating a Visitor/Truck message with appropriate arrows should be used.

Left arrows should be placed to the left side of the word and right arrows should be placed to the right side of the word.

**R4-31 TEA**


**R4-32 TEA**

# PART 3

# Markings

**Section 3B.28 Active Vehicle Barrier (AVB) Envelope Markings**

**Standard:**

**Active vehicle barriers shall be surrounded with a retroreflective white pavement marking envelope to delineate the hazard area and prohibit standing or parking on the safety loops. The envelope shall consist of 12" wide stripes at a 45 degree angle separated by a 24" clear space. The envelope shall be full lane width and a minimum of 8 feet in length.**

Support:

The use of the safety envelope is required to reduce the probability of vehicles resting over the AVB, or resting over the safety loop, thereby preventing the barrier from deploying.

**Section 3B.29 AVB Markings**

**Standard:**

**The AVBs shall have retroreflective markings that are in conformance with the MUTCD Section 8C.04. Active Vehicle Barriers shall be fully-retroreflectorized on both sides with alternating red and white vertical striping (16 inches in width). The minimum height of the vertical stripes shall be 4 inches. The minimum amount of retroreflectorized surface visible to oncoming traffic shall be 1152 square inches. When it is impossible to meet the 1152 square inches of visible surface area due to the AVB design, supplemental in-road lighting or AVB attached warning lights are required.**

Support:

AVBs, when deployed, are a form of road closure and are a significant hazard to vehicles. The amount of surface area available for marking with retroreflective material is limited by the varying AVB designs. Therefore the dimensions of the red/white intervals may be modified to fit the AVB design. Contact SDDCTEA for guidance specific to the differing AVB designs.

# PART 4

# Highway Traffic Signals

## Chapter 4D. Active Vehicle Barrier Signalization

**Section 4D.38 Barrier Signals**

**Standard:**

**All approaches to AVBs shall conform substantially with an SDDCTEA barrier safety scheme, as detailed in SDDCTEA's pamphlet on ECFs. All signal heads shall be mounted in accordance with MUTCD Section 4D.**

*Guidance:*

*There are multiple barrier safety schemes. Different types of barrier safety schemes may utilize standard red/yellow/green signals, emergency vehicle hybrid beacons or solid red beacons, mounted overhead on mast arms or roadside on pedestals as shown in SDDCTEA's Pamphlet on ECFs.*

# Chapter 4G. Traffic Control Signals and Hybrid Beacons for Emergency-Vehicle Access

**Section 4G.01 <u>Application of Emergency-Vehicle Traffic Control Signals and Hybrid Beacons</u>**

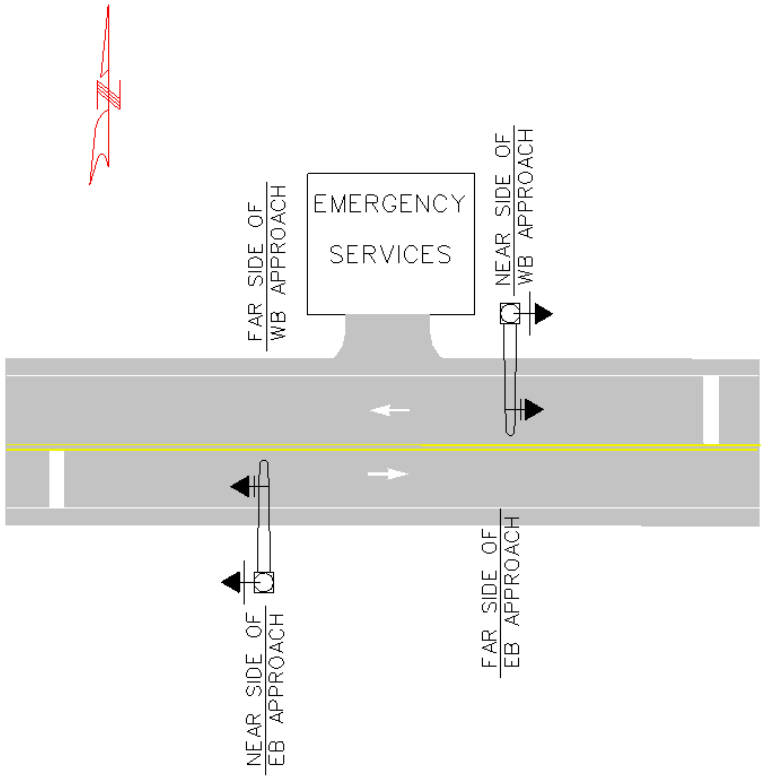
**Standard:**

**A traffic engineering study shall be performed prior to installation of emergency signals.**

*Guidance:*

*The emergency signals should be placed on the near side of intersection (see figure 4G-5) and the use of hybrid beacons should be utilized.*

***Figure 4G-5***



# Chapter 4O. Lane Assignment Signals at ECFs

**Standard:**

**Lane-use control signals used at ECFs shall comply with the provisions of MUTCD Chapter 4M.**

**When one or more reversible lanes are used, provide green downward-pointing lane use arrows to illuminate when a lane is open. Provide a red X to be illuminated when the lane is closed or open to traffic in the opposite direction. The red X is only necessary for use with reversible lanes.**

*Guidance*

*At ECFs with multiple lanes, or where one or more lanes is sometimes closed to traffic, a lane-use control signal should be installed above the center of each lane to indicate the open or closed status of the controlled lane.*

Support:

The national MUTCD standard disallows mounting the traffic signal housing so that the bottom is lower than 15 feet when located over a highway. The intent of this standard is to assure that mast arm-mounted or wire-span signal heads are high enough to avoid being hit by vehicles. For canopies with a vertical clearance of less than 15 feet, the signal housing may be mounted lower than 15 feet but should not be lower than the vertical clearance of the canopy.

# PART 5

# Traffic Control Devices For Low-Volume Roads

No revisions.

# PART 6

# Temporary Traffic Control

No revisions.

# PART 7

# Traffic Control For School Areas

No revisions.

# PART 8

# Traffic Control For Railroad And Light Rail Transit Grade Crossings

No revisions.

# PART 9

# Traffic Control For Bicycle Facilities

No revisions.

# PART 10

# Warrants for Uncontrolled Crosswalk Locations

**Section 11A.01 <u>Crosswalks at Midblock Locations and on Uncontrolled Approaches to Intersections</u>**

*This section provides criteria for pedestrian crossing marking at a midblock location or on an uncontrolled approach to an intersection. If warrants are met and a crosswalk is marked, additional enhancements will be required, go to SDDCTEA's website to obtain guidance on striping, signing and signalization of marked crosswalks. This section is not intended for school crossings; Part 7 of the MUTCD discusses traffic control for school areas.*

**Standard:**

**For a proposed crosswalk at midblock or on an uncontrolled approach to an intersection, the following two criteria shall be satisfied in conjunction with the proposed marked crosswalk:**

- **The crosswalk shall provide adequate sight distance; to include vertical, horizontal, and intersection stopping sight distance.**
- **The crosswalk shall not cross any part of an auxiliary lane transition. Two-way left-turn lanes are not considered auxiliary lanes.**

*Guidance:*

*Locations being considered for a crosswalk (midblock or an uncontrolled approach to an intersection) should have a minimum level of traffic and pedestrian volumes. The following four criteria should be satisfied prior to installation:*

- *Location of midblock crossings should be 300 feet (200 feet minimum with an engineering study) from any controlled intersection (all-way signal/stop/yield control or pedestrian overpass).*
- *Pedestrian crossing volumes should meet one of the following conditions:*
    - *20 pedestrians per hour during the peak pedestrian hour, or*
    - *15 elderly, disabled and/or children per hour during the peak pedestrian hour, or*
    - *60 pedestrians total for the highest consecutive pedestrian 4-hour period.*

  *Pedestrian counts should only include pedestrians crossing within 100 feet either side of the proposed crosswalk location in an attempt to capture only potential users of the proposed crosswalk.*

- *The two-way traffic volume should meet the minimum of 1500 vehicles for the average daily traffic or 150 vehicles in the design hour. (Traffic count times should coincide with pedestrian count times.)*
- *The current pedestrian crossing is not due to a correctable gap in the sidewalk system.*

Support:

Crosswalks should not be installed at locations that could present an increased safety risk to pedestrians without first providing adequate design features and/or traffic control devices. "*Adding crosswalks alone will not make crossings safer, nor will they increase vehicles stopping for pedestrians. Whether or not marked crosswalks are installed, it is important to consider other pedestrian facility enhancements (e.g., signing, raised median, traffic signal, roadway narrowing, enhanced overhead lighting, traffic-calming measures, curb extensions), as needed, to improve the safety of the crossing."* Good engineering judgment should be used in individual cases for deciding where to install crosswalks. (FHWA PUBLICATION # HRT-04-100)

For additional guidance, refer to SDDCTEA's pamphlets on traffic engineering available on our website (**http://www.sddc.army.mil/sites/tea/Pages/default.aspx)**